

GAO

Testimony

Before the Subcommittee on Military Procurement,  
Committee on National Security,  
House of Representatives

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CHEMICAL WEAPONS  
DISPOSAL

Issues Related to DOD's  
Management

Statement of David R. Warren, Director, Defense Management  
and NASA Issues, National Security and International Affairs  
Division



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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss our work concerning the Department of Defense's (DOD) management of the U.S. chemical stockpile disposal program. DOD plans to dispose of more than 29,000 metric tons of lethal chemical agents and weapons stockpiled at eight sites in the continental United States and one site on Johnston Atoll in the Pacific. DOD's latest cost estimate for the disposal program is \$11.9 billion. Our work over the last several years has focused on a number of interrelated issues involving (1) cost, schedule, and performance; (2) environmental permitting; (3) stability of the chemical stockpile; (4) emergency preparedness of communities located near the stockpile; and (5) alternative disposal technologies. Enclosure I provides a listing of our products related to the chemical stockpile disposal program. As you requested, I will summarize the results of our work.

#### SUMMARY OF RESULTS

DOD has experienced significant cost growth and delays in executing its disposal plan. Since 1985, the Army's cost estimate to destroy the chemical weapons stockpile has increased from an initial estimate of \$1.7 billion to \$11.9 billion, and the planned completion date has been extended from September 1994 to April 2004. Because of the cost growth, schedule delays, and importance of the issue, DOD has recently taken some encouraging steps to improve its management and oversight of the disposal program. For example, DOD has (1) designated the program as a major acquisition to improve cost and schedule controls, (2) designated the Assistant Secretary of the Army (Research, Development and Acquisition) as the program's executive agent to elevate the financial management and review process, (3) initiated actions to reassess the stability of chemical weapons, and (4) restructured and centralized its Chemical Stockpile Emergency Preparedness Program (CSEPP) to streamline procedures and improve the budgeting process. Notwithstanding these actions, there are still a number of areas that are of concern:

- To date, two of nine planned incinerators have been built and only one of the two, at Johnston Atoll, is operational. Although approximately \$2 billion has been spent on the program, only two percent of the stockpile has been destroyed.
- The Army continues to experience added program requirements, public opposition, and technical and programmatic problems.<sup>1</sup> As a result, the program is at risk of further cost growth and

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<sup>1</sup>The Department of the Army is DOD's lead military service for chemical matters.

schedule slippage. The Army plans to issue a revised life-cycle cost estimate and disposal schedule in December 1995.

- Although the storage of the M55 rocket poses the largest safety risk, the Army lacks information to predict the safe storage life of the rocket.
- Although the Army has spent more than \$300 million on CSEPP since 1988, communities near the storage sites are not yet fully prepared to respond to a chemical emergency. The Army now estimates that CSEPP will cost almost \$975 million through 2004.
- The Army is researching, at an estimated cost of \$224 million, two alternatives to the baseline incineration process-- neutralization and neutralization followed by biodegradation. However, program officials have stated that even if successful, neither technology could be ready in time to meet the current disposal deadline of December 31, 2004.

#### BACKGROUND

In 1985, the Congress passed Public Law 99-145 directing DOD to destroy its stockpile of unitary chemical weapons and agents. The stockpile consists of rockets, bombs, projectiles, spray tanks, and bulk containers of nerve and mustard agents. The weapons and agents are stored at eight sites in the continental United States and one site on Johnston Atoll in the Pacific.<sup>2</sup> To comply with congressional direction, the Army developed a plan to dispose of the stockpile in specially designed high-temperature incinerators. The reverse assembly and incineration disposal process is mostly automated and is executed in three stages: (1) unpacking, (2) disassembling and draining, and (3) incinerating.

In 1988, the Army established CSEPP to assist communities near the eight storage sites in the continental United States improve their emergency response capabilities. Threats to the chemical stockpile include external events such as earthquakes, airplane crashes, and tornadoes and internal events such as spontaneous leakage of chemical agents, accidents during normal handling and maintenance activities, and self-ignition of propellant. The effect of an accidental chemical release on a nearby community would depend on such things as the amount and type of agent released, meteorological conditions, and the community's proximity to the storage location. The number of people living within the immediate response zone (10 kilometers or 6.2 miles) of the chemical weapons

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<sup>2</sup>The continental locations are Aberdeen Proving Ground, Maryland; Anniston Army Depot, Alabama; Blue Grass Army Depot, Kentucky; Newport Ammunition Plant, Indiana; Pine Bluff Arsenal, Arkansas; Pueblo Depot Activity, Colorado; Tooele Army Depot, Utah; and Umatilla Depot Activity, Oregon.

storage sites ranges from 101 in Tooele, Utah, to 44,054 in Aberdeen, Maryland.<sup>3</sup> Under a memorandum of understanding, the Army shares management of CSEPP with the Federal Emergency Management Agency (FEMA). State and local officials, in accordance with state laws, have primary responsibility for developing and implementing emergency response programs for communities in the event of an emergency involving chemical agents.

In 1993, the United States signed the U.N.-sponsored Convention on the Prohibition of the Development, Production, Stockpiling and the Use of Chemical Weapons and on Their Destruction, commonly called the Chemical Weapons Convention. Under the treaty, signatories must dispose of their unitary chemical weapons stockpile, binary chemical weapons, recovered chemical weapons, and former chemical weapons production facilities within 10 years after entering into force. The convention becomes effective 180 days after the 65th nation deposits its instrument of ratification. As of March 29, 1995, 158 countries had signed the convention and 27 countries had ratified it. The President submitted the convention to the U.S. Senate for its advice and consent to ratification on November 30, 1993.

Enclosure II provides a chronology of the U.S. chemical stockpile disposal program.

#### POSSIBILITY OF FURTHER COST GROWTH AND SCHEDULE SLIPPAGE

Since 1985, the Army's cost estimate to destroy the chemical weapons stockpile has increased seven fold from an initial estimate of \$1.7 billion to its current \$11.9 billion estimate, and the completion date has been extended almost 10 years, from September 1994 to April 2004. Reasons for the cost increases and schedule delays include (1) program enhancements to respond to concerns for the maximized safety of personnel and the public; (2) delays in completing the Operational Verification Test at the Johnston Atoll Chemical Agent Disposal System (JACADS); (3) persistent technical problems resulting in lower than expected disposal rates; (4) requirements to clean, dismantle, and dispose of the plants; and (5) implementation of the National Research Council's recommendations to improve filtration systems.

The Army's \$11.9 billion estimate is at risk of increasing because of (1) uncertainties regarding environmental requirements, (2) potential schedule delays resulting from public opposition to incineration, and (3) lower than expected disposal rates at the prototype facility at Johnston Atoll. An October 1994 Army Cost

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<sup>3</sup>Ten kilometers roughly corresponds to the area that has less than one hour to respond to a chemical agent release. This area, called an immediate response zone, varies by storage site.

and Economic Analysis Center review indicates that these factors could drive programmatic costs as high as \$12.9 billion. The Army plans to issue a revised life-cycle cost estimate and disposal schedule in December 1995. Enclosure III provides appropriation and expenditure data for the program for fiscal years 1988 through 1995.

Actions to Respond to  
Environmental Requirements  
Could Extend the Disposal Schedule

Changes to environmental compliance requirements under the Resource Conservation and Recovery Act (RCRA) and state hazardous waste laws have caused the Army to revise its disposal schedule and life-cycle cost estimates. Army program officials reported in September 1994 that environmental permitting was the single area most likely to affect planned program schedules because of uncertainties about changing regulations. The Army must obtain RCRA and Clean Air Act permits from each state with proposed incineration sites before beginning construction. Under the RCRA, state governments may establish regulations that are more stringent than federal standards. For example, Kentucky and Indiana have enacted legislation requiring the Army to demonstrate the absence of any acute or chronic health or environmental effects from chemical incineration before an environmental permit will be granted. According to the Centers for Disease Control, a 30-year epidemiological study would be required to meet that requirement.

Environmental permitting at the Anniston Army Depot, Alabama, may be delayed because of the recommended closure of Fort McClellan, which borders the Anniston Army Depot to the north. The Alabama Department of Environmental Management has stated that it cannot issue environmental permits to construct and operate the Anniston facility unless the Army demonstrates that adequate emergency response capabilities are in place. While Fort McClellan has previously been cited as the source for any contingency response, plans for the closure emphasize that it is the Army, not necessarily the fort, that is responsible for formulating a contingency response plan acceptable to the State of Alabama. The Army is developing plans to handle emergency response for Anniston when Fort McClellan closes.

In another example, Army officials recently told us that the Hazardous Waste Reduction and Combustion Strategy established by the Environmental Protection Agency in 1993 could also extend the time required to obtain permits. This strategy increased requirements for incinerator permitting and operation without providing implementation guidance or compliance strategy. Army officials believe one requirement, the need for a health risk assessment, could add up to 24 months to the permitting schedules.

Program Delays and Actions to  
Respond to Public Opposition to  
the Baseline Incineration Process

Although the Army has taken actions to improve its public outreach program, public opposition to the incineration of chemical munitions or agents continues to be considerable. The opposition centers on concerns about adverse health effects and environmental hazards. This concern comes from citizen groups and environmental organizations and has extended the environmental review and approval process and required the Army to delay its plans for the construction and operation of incinerators.

Public opposition to the disposal program exists in varying degrees at all disposal sites. The Army has taken steps to discuss with and gain input from local citizens in communities surrounding disposal sites by establishing Intergovernmental Consultation and Coordination Boards, conducting public meetings, sponsoring community based studies, and establishing Citizen Advisory Commissions in each affected state.

Nonetheless, concerns exist regarding the potential ill health effects of incineration, lack of public involvement in the decision-making processes, and lack of credibility the Army has in certain communities. A study commissioned by the Army and conducted by an independent contractor included recommendations to improve communications with the public. In 1994, the Army reported that it would implement an enhanced public outreach and involvement program and would consider the formation of site offices at each storage site.

Lower than Expected Disposal Rates at Johnston Atoll

The prototype facility at Johnston Atoll is the Army's first full-scale chemical disposal facility. The facility uses an automated, reverse assembly and incineration disposal process. Since beginning operations in June 1990 through May 1995, JACADS has destroyed about 108,000 rockets, projectiles, and ton containers. However, JACADS's operational testing took longer than expected and did not achieve the anticipated goals. Similarly, JACADS' disposal rates during full-scale operations have been less than expected. As a result, destruction will take longer than planned, and the Army's current cost estimate could be understated by as much as \$348 million.

The Army conducted four operational testing campaigns to demonstrate that chemical weapons could be incinerated within Environmental Protection Agency standards and to assess the reliability of the mechanical process. The testing was originally scheduled to take 16 months, but it was extended to 31 months when the Army experienced difficulties such as a detonation inside one of the furnaces, jamming of a munitions conveyor, and problems

accessing agent from projectiles. As a result, the Army did not achieve its destruction rate goals, destroying 17 rockets per hour compared to a goal of 24 rockets per hour, and 35 projectiles per hour compared to a goal of 56 projectiles per hour.

Based on the rates achieved during testing, the Army extended its planned operating schedules thereby reducing anticipated destruction rates for JACADS and future sites. The projected rocket destruction rate was lowered to about 10 rockets per hour. However, we have found that the facility has not achieved these lower goals, destroying an average of seven rockets per hour from January 1994 to May 1995. Reasons for the low destruction rates include reduced operational availability due to a detonation inside the facility and buildup of a glassy slag material inside the liquid agent incinerator. The Army has developed design changes to address the mechanical difficulties; however, some will not be tested until the disposal facility at Tooele Army Depot, Utah, begins operations. That facility is currently conducting nontoxic tests of the plant's systems.

#### Steps Taken to Improve the Management Of the Chemical Disposal Program

Although the program has experienced problems in the past, DOD has recently taken some encouraging steps to improve management and oversight of the stockpile disposal program. Because of increasing disposal costs and schedule slippage, changing legislative and regulatory requirements, and growing public opposition, DOD designated the Army's chemical disposal program as a major defense acquisition program. The designation changed management responsibility from the Assistant Secretary of the Army (Installations, Logistics and Environment) to the Assistant Secretary of the Army (Research, Development and Acquisition) and was intended to (1) stabilize the disposal schedule, (2) control costs, and (3) provide more discipline and higher levels of program oversight. As such, the Army will be required to

- develop a program cost and schedule baseline;
- prepare quarterly defense acquisition executive summaries, which are intended to provide an early warning that the baseline may be exceeded; and
- submit an annual selected acquisition report to the Congress, which includes variances from the program baseline schedule and cost.

## STABILITY OF THE STOCKPILE IS UNCERTAIN

The stability of the stockpile is another area of concern because the Army continues to experience delays in implementing its disposal program and may have to store the stockpile longer than planned. The Fiscal Year 1993 Defense Authorization Act required the Army to report on the physical and chemical integrity of the stockpile. In December 1994, we reported that the Army's assessment that the chemical stockpile can be safely stored until 2004 is subject to question based on the nature of the supporting information.<sup>4</sup> The data on which the Army based its assessment were old and may no longer represent the chemical weapons in storage. For example, at that time, no field samples of the M55 rocket propellant had been taken since 1989. In addition, the assessment did not include an analysis of leaking munitions. Leaks increase the risk of self ignition during handling. The M55 rocket is most prone to leaks and poses the largest safety hazard in the stockpile. These munitions are stored at Anniston Army Depot, Alabama; Blue Grass Army Depot, Kentucky; Pine Bluff Arsenal, Arkansas; Tooele Army Depot, Utah; and Umatilla Depot Activity, Oregon. Enclosure IV identifies weapons and agents stored at each site.

In addition, a contingency plan for disposal of the rocket is needed because it is the only weapon in the stockpile that cannot readily be reconfigured to remove its propellant.<sup>5</sup> Propellant is inherently unstable and must be stabilized to help prevent reactions that could lead to a spontaneous ignition. Manufacturers add stabilizing compounds, but they deteriorate over time. All munitions with propellant, except the M55 rocket, are to have their propellants removed by 1998.

Recent Army initiatives to obtain better information to predict the safe storage life of the M55 rocket are encouraging. For example, the Army initiated an Enhanced Stockpile Assessment Program to determine the effects of an agent on a propellant, identify the most appropriate predictive methodology, develop sampling plans, and perform periodic assessments. The Army is also studying the integrity of the plugs and valves of agent-filled ton containers.

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<sup>4</sup>Chemical Weapons: Stability of the U.S. Stockpile (GAO/NSIAD-95-67, Dec. 22, 1994).

<sup>5</sup>At the Tooele Army Depot, reconfiguration activities (separation of propellant from agent-filled munitions) for 105mm projectiles and 4.2 inch mortars have been completed. According to the Army, reconfiguration enhances the safe storage of the munitions pending their disposal.

THE ARMY'S EMERGENCY PREPAREDNESS PROGRAM  
HAS BEEN SLOW TO ACHIEVE RESULTS

The Army established CSEPP to help those communities near the eight storage sites in the continental United States improve their emergency response capabilities to a chemical accident. Enclosure V identifies the locations of these sites. Our work has shown that CSEPP has been slow to achieve results and that the program's financial management and internal control systems have weaknesses. For example, in 1994 we reported that communities near the storage sites were not fully prepared to respond to a chemical emergency.<sup>6</sup> In 1995, we reported that because of weaknesses in CSEPP's financial management reporting and internal control systems, Army and FEMA officials lack accurate financial information to identify how funds are spent and ensure program goals are achieved.<sup>7</sup> The Army now estimates that life-cycle costs for CSEPP will be almost \$975 million.

Communities Were Not Fully Prepared to  
Respond to a Chemical Emergency

In our 1994 report, we stated that communities near chemical weapons storage sites were not yet prepared to respond to a chemical emergency. For example, the communities were unable to complete their plans and preparations because the Army and FEMA had not fully identified the risks of an accidental release to nearby communities. Also, communities lacked some items identified by CSEPP officials as critical to an emergency response. This included items such as alert and notification devices, antidotes, decontamination equipment, emergency operations centers, evacuee support systems, final automation systems, protective gear ensembles, and traffic and access control plans.

In a follow-up report in March 1995, we reported that some readiness problems continued. For example, although CSEPP funds have been used for priority items, not all essential items are operational or have been purchased at four sites that we visited.

Weaknesses in Financial Management  
and Internal Control Systems

In both our 1994 and 1995 reports, we noted that program officials were hampered by inadequate financial information and that CSEPP's financial management and organization needed improvements. For

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<sup>6</sup>Chemical Weapon Stockpile: Army's Emergency Preparedness Program Has Been Slow to Achieve Results (GAO/NSIAD-94-91, Feb. 22, 1994).

<sup>7</sup>Chemical Weapons: Army's Emergency Preparedness Program Has Financial Management Weaknesses (GAO/NSIAD-95-94, Mar. 15, 1995).

example, Army and FEMA officials lack accurate financial information to identify how funds are spent and ensure program goals are achieved. Specifically, our reviews showed that (1) CSEPP allocation and expenditure data were inaccurate, inconsistent, or incomplete; (2) FEMA's reports to the Army were incomplete and inconsistent; and (3) some states reprogrammed funds without the knowledge of federal officials. Although program managers have recognized the need to improve CSEPP's financial management, in 1994 they still could not provide us complete or accurate financial data. Adequate internal controls to ensure assets are safeguarded and program goals are efficiently and effectively achieved did not exist.

#### Recent Improvements in the Management of CSEPP

In response to congressional guidance and our 1995 report on CSEPP, the Army took actions to improve program management and accountability of the program. For example, the Army restructured the overall management of CSEPP and established a centralized office in the U.S. Army Chemical and Biological Defense Command. It also streamlined procedures, took actions to improve responsiveness to the states and counties, and enhanced the budget process. In addition, Army officials are working to improve CSEPP's financial management and internal controls.

#### ALTERNATIVE DISPOSAL TECHNOLOGY PROGRAM

As a result of growing opposition to incineration, the Congress, in the Fiscal Year 1993 Defense Authorization Act, directed the Army to submit a report on potential technological alternatives to chemical weapons incineration. The Congress provided three criteria for the implementation of the Army's alternative technology program--that the alternative must be significantly safer, cost neutral, and able to complete the disposal program by the end of 2004. In April 1994, the Army recommended the continuation of the chemical disposal program without deliberate delay and the implementation of a two-technology research and development program. As a result, the Army is researching neutralization, and neutralization followed by biodegradation at an estimated life-cycle cost of \$224 million. However, program officials have expressed concern that neither technology will be ready in time to meet the current deadline of December 31, 2004.

In our 1994 report on chemical weapons destruction methods, we concluded that alternative technologies were unlikely to reach maturity in time to destroy the chemical weapons stockpile because they were in the initial development stages and over a decade away

from full operations.<sup>8</sup> The Environmental Protection Agency has stated that any proposed chemical disposal technology would have to undergo analysis and evaluation similar to the incineration process.

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This concludes my statement, Mr. Chairman. I would be pleased to answer any questions that you or other members of the Subcommittee may have.

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<sup>8</sup>Chemical Weapons Destruction: Advantages and Disadvantages of Alternatives to Incineration (GAO/NSIAD-94-123, Mar. 18, 1994).

RELATED GAO PRODUCTS

Chemical Weapons: Army's Emergency Preparedness Program Has Financial Management Weaknesses (GAO/NSIAD-95-94, Mar. 15, 1995).

Chemical Stockpile Disposal Program Review (GAO/NSIAD-95-66R, Jan. 12, 1995).

Chemical Weapons: Stability of the U.S. Stockpile (GAO/NSIAD-95-67, Dec. 22, 1994).

Chemical Weapons Disposal: Plans for Nonstockpile Chemical Warfare Materiel Can Be Improved (GAO/NSIAD-95-55, Dec. 20, 1994).

Chemical Weapons: Issues Involving Destruction Technologies (GAO/T-NSIAD-94-159, Apr. 26, 1994).

Chemical Weapons Destruction: Advantages and Disadvantages of Alternatives to Incineration (GAO/NSIAD-94-123, Mar. 18, 1994).

Arms Control: Status of U.S.-Russian Agreements and the Chemical Weapons Convention (GAO/NSIAD-94-136, Mar. 15, 1994).

Chemical Weapon Stockpile: Army's Emergency Preparedness Program Has Been Slow to Achieve Results (GAO/NSIAD-94-91, Feb. 22, 1994).

Chemical Weapons Storage: Communities Are Not Prepared to Respond to Emergencies (GAO/T-NSIAD-93-18, July 16, 1993).

Chemical Weapons Destruction: Issues Affecting Program Cost, Schedule, and Performance (GAO/NSIAD-93-50, Jan. 21, 1993).

Chemical Weapons Destruction: Issues Related to Environmental Permitting and Testing Experience (GAO/T-NSIAD-92-43, June 16, 1992).

Chemical Weapons Disposal (GAO/NSIAD-92-219R, May 14, 1992).

Chemical Weapons: Stockpile Destruction Cost Growth and Schedule Slippages Are Likely to Continue (GAO/NSIAD-92-18, Nov. 20, 1991).

CHRONOLOGY OF THE U.S. CHEMICAL  
STOCKPILE DISPOSAL PROGRAM

| Time frame  | Activity  |
|-------------|---|
| 1910s-1960s | Obsolete or unserviceable chemical warfare agents and munitions were disposed of by open pit burning, land burial, and ocean dumping.   |
| 1969        | The National Academy of Sciences (NAS) recommended that ocean dumping be avoided and that public health and environmental protection be emphasized. NAS suggested two alternatives to ocean disposal: chemical neutralization of nerve agents and incineration of mustard agents.   |
| 1970        | The Armed Forces Appropriation Act (P.L. 91-441) required detoxification of weapons, prior to disposal and the Department of Health and Human Services review of any disposal plans. It also limited the movement of chemical weapons.  |
| 1971        | The Foreign Military Sales Act prohibited the transportation of U.S. chemical weapons from Okinawa, Japan, to the continental U.S. The weapons were moved to Johnston Atoll.  |
| 1971-1973   | The Army tested and developed an incineration process and disposed of several tons of mustard agent stored in ton containers at Rocky Mountain Arsenal, Colorado.   |
| 1973-1976   | The Army disposed of nearly 4,200 tons of nerve agent by chemical neutralization at Tooele Army Depot, Utah, and Rocky Mountain Arsenal. The process was problematic and not very reproducible, making automation difficult.  |
| 1979        | The Army opened the Chemical Agent Munitions Disposal System (CAMDS) at Tooele Army Depot to test and evaluate disposal equipment and processes for chemical agents and munitions on a pilot scale.   |
| 1981        | The Army chose high temperature incineration as the best and safest method for destroying chemical weapons and agents.  |
| 1981-1986   | The Army used CAMDS to test and evaluate incineration of chemical agents and energetic materiel, and decontamination of metal parts and ton containers.   |
| 1982        | An Arthur D. Little Corporation study for the Army concluded that incineration, rather than neutralization, of the stockpile would reduce costs.  |
| 1982        | The Army declared its stockpile of M55 rockets obsolete.  |
| 1984        | The NAS National Research Council endorsed the Army's disassembly and high-temperature incineration process for disposing of chemical agents and munitions. The council also recommended that the Army continue to store most of the chemical stockpile, dispose of the M55 rockets, and analyze alternative methods for disposing of the remaining chemical stockpile. |

| Time frame | Activity   |
|------------|--|
| 1985       | The Army began constructing the Johnston Atoll Chemical Agent Disposal System.   |
| 1985       | The Department of Defense Authorization Act for Fiscal Year 1986 (P.L. 99-145) mandated the destruction of the U.S. stockpile of lethal chemical agents and munitions. It also required the disposal facilities to be cleaned, dismantled, and disposed of according to applicable laws and regulations.                               |
| 1986       | The National Defense Authorization Act for Fiscal Year 1987 (P.L. 99-500) prohibits shipments of chemical weapons, components, or agents to the Blue Grass Depot Activity for any purpose.   |
| 1987       | CAMDS operations were suspended at the Tooele Army Depot as a result of a low-level nerve agent release.   |
| 1988       | The Army issued the Final Programmatic Environmental Impact Statement for the Chemical Stockpile Disposal Program. The Army selected on-site disposal of the stockpile because it posed fewer potential risks than transportation and off-site disposal.   |
| 1988       | The Chemical Stockpile Emergency Preparedness Program was established to improve emergency response capabilities in communities near the eight sites in the continental U.S. where chemical weapons are stored.  |
| 1988       | The National Defense Act of Fiscal Year 1989 (P.L. 100-456) required the Army to complete operational verification testing at Johnston Atoll before beginning to systematize similar disposal facilities in the continental United States.   |
| 1989       | The Army started construction of the chemical disposal facility at Tooele Army Depot.  |
| 1990       | The Army completed the successful retrograde of all chemical munitions stored in Germany to storage facilities at Johnston Atoll.  |
| 1990       | A very small amount of nerve agent leaked from JACADS.   |
| 1990-1993  | The Army completed four operational verification tests at JACADS. During the tests, the Army destroyed more than 40,000 munitions containing nerve and mustard agents. In August 1993, the Secretary of Defense certified to Congress that the Army successfully completed the operational verification tests at JACADS.               |
| 1991       | The National Defense Authorization Act for Fiscal Year 1991 (P.L. 101-510) restricted the use of funds to transport chemical weapons to Johnston Atoll, except for U.S. munitions discovered in the Pacific, prohibited the Army from studying the movement of chemical munitions, and established the emergency preparedness program. |
| 1991       | The Army moves 109 World War II mustard-filled projectiles from the Solomon Islands to Johnston Atoll for storage and disposal.  |
| 1991       | The National Defense Authorization Act for Fiscal Years 1992 and 1993 (P.L. 102-190) required the Secretary of Defense to develop a chemical weapons stockpile safety contingency plan.  |

| Time frame | Activity  |
|------------|---|
| 1992       | The U.S. Army Chemical Materiel Destruction Agency was established to consolidate operational responsibility for the destruction of chemical warfare capabilities into one office.  |
| 1992       | The National Defense Authorization Act for Fiscal Year 1993 (P.L. 102-484) directed the Army to establish citizens' commissions for states with storage sites, if a state's governor requested one. It also required the Army to report on disposal alternatives to the baseline incineration method.   |
| 1993       | JACADS was shutdown due to a fire during operational verification testing.  |
| 1993       | The Army completed construction and started systemization of the Tooele chemical agent disposal facility.   |
| 1993       | The Army issued its report on the physical and chemical integrity of the chemical stockpile to the Congress.  |
| 1993       | A mustard leak from a ton container was discovered at Tooele Army Depot.  |
| 1994       | Approximately 11.6 milligrams of nerve agent were released into the atmosphere at JACADS.   |
| 1994       | The NAS's National Research Council issued its recommendations for the disposal of chemical agents and munitions to the Army.   |
| 1994       | The Army issued its alternative demilitarization technology report to the Congress. The Army recommended the continuation of the chemical disposal program without deliberate delay and the implementation of a two-technology research and development program.  |
| 1994       | The Army issued its M55 rocket stability report to the Congress. The report recommended that an enhanced stockpile assessment program be initiated to better characterize the state of the M55 rocket in the stockpile.   |
| 1994       | The U.S. Army Chemical Materiel Destruction Agency was redesignated the U.S. Army Chemical Demilitarization and Remediation Activity after a merger with the U.S. Army Chemical and Biological Defense Command. In addition, the Army restructured and centralized its chemical stockpile emergency preparedness program to streamline procedures, improve responsiveness of operations, and improve the budgeting process. |
| 1994       | The Assistant Secretary of the Army for Research, Development and Acquisition became the Department of Defense Executive Agent for the Chemical Demilitarization Program, replacing the Assistant Secretary of the Army for Installations, Logistics, and Environment. The Chemical Demilitarization Program was designated a DOD Acquisition Category 1D Program.  |

APPROPRIATED, OBLIGATED, AND DISBURSEMENT DATA  
FOR FISCAL YEARS 1988 THROUGH 1995

Table III.1: Chemical Stockpile Disposal Program

(Dollars in millions)

| <b>Fiscal year</b> | <b>Appropriated</b> | <b>Obligated</b> | <b>Expended</b>  |
|--------------------|---------------------|------------------|------------------|
| 1988               | \$195.8             | \$194.3          | \$192.9          |
| 1989               | 233.7               | 230.5            | 229.5            |
| 1990               | 210.5               | 208.6            | 196.8            |
| 1991               | 331.3               | 323.4            | 310.1            |
| 1992               | 463.7               | 426.9            | 380.1            |
| 1993               | 469.5               | 417.9            | 247.7            |
| 1994               | 356.1               | 240.1            | 208.1            |
| 1995               | 501.2               | 223.2            | 55.8             |
| <b>Total</b>       | <b>\$2761.8</b>     | <b>\$2,264.9</b> | <b>\$1,821.0</b> |

Note: As of May 31, 1995.

Table III.2: Alternative Technology Program

(Dollars in millions)

| <b>Fiscal year</b> | <b>Appropriated</b> | <b>Obligated</b> | <b>Expended</b> |
|--------------------|---------------------|------------------|-----------------|
| 1994               | \$20.7              | \$11.4           | \$3.5           |
| 1995               | 9.4                 | 0.0              | 0.0             |
| <b>Total</b>       | <b>\$30.1</b>       | <b>\$11.4</b>    | <b>\$3.5</b>    |

Note: As of May 31, 1995.

Source: U.S. Army Chemical Demilitarization and Remediation Activity

Table III.3: Chemical Stockpile Emergency Preparedness Program

(Dollars in millions)

| <b>Fiscal year</b> | <b>Appropriated</b> | <b>Obligated</b> | <b>Expended</b> |
|--------------------|---------------------|------------------|-----------------|
| 1988               | \$2.5               | \$2.5            | \$2.5           |
| 1989               | 11.3                | 11.3             | 11.2            |
| 1990               | 43.7                | 43.7             | 42.5            |
| 1991               | 37.7                | 37.7             | 33.8            |
| 1992               | 40.9                | 40.4             | 36.2            |
| 1993               | 65.7                | 69.2             | 54.5            |
| 1994               | 79.4                | 71.6             | 59.6            |
| 1995               | 66.4                | 27.4             | 4.7             |
| <b>Total</b>       | <b>\$347.6</b>      | <b>\$303.8</b>   | <b>\$245.0</b>  |

Note: As of May 31, 1995.

Table III.4: Summary of All Chemical Demilitarization Programs

(Dollars in millions)

| <b>Program</b>                            | <b>Appropriated</b> | <b>Obligated</b> | <b>Expended</b>  |
|---|---------------------|------------------|------------------|
| Chemical stockpile disposal               | \$2,761.8           | \$2,264.9        | \$1,821.0        |
| Alternative technology                    | 30.1                | 11.4             | 3.5              |
| Chemical stockpile emergency preparedness | 347.6               | 303.8            | 245.0            |
| <b>Total</b>                              | <b>\$3,139.5</b>    | <b>\$2,580.1</b> | <b>\$2,069.5</b> |

Note: As of May 31, 1995.

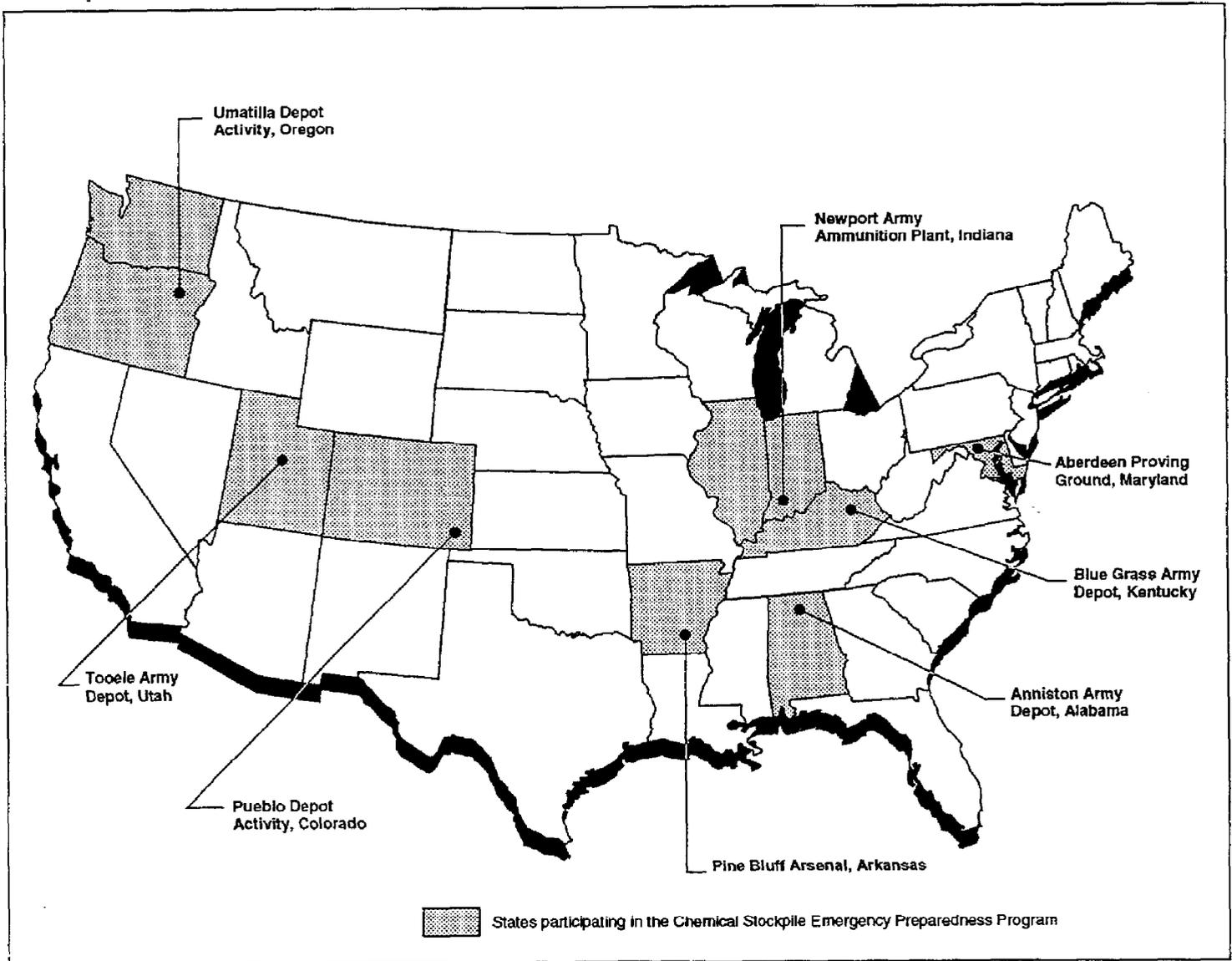
Source: U.S. Army Chemical Demilitarization and Remediation Activity

CHEMICAL STOCKPILE MUNITIONS AND LOCATIONS

| Storage site                      | Weapons and agents stored   | Percent of stockpile |
|-----------------------------------|---|----------------------|
| Aberdeen Proving Ground, Maryland | Ton containers (H)  | 5                    |
| Anniston Army Depot, Alabama      | M23 mines (VX)<br>M55 rockets (GB&VX)<br>Projectiles and cartridges (H,GB&VX)<br>Ton containers (H&GB)                                      | 7                    |
| Blue Grass Army Depot, Kentucky   | M55 rockets (GB&VX)<br>Projectiles and cartridges (H&VX)<br>Ton containers (H&VX)   | 2                    |
| Johnston Atoll <sup>a</sup>       | Bombs (GB)<br>M23 mines (VX)<br>M55 rockets (GB)<br>Projectiles and cartridges (H,GB&VX)<br>Ton containers (H&VX)                           | 6                    |
| Newport Ammunition Plant, Indiana | Ton containers (VX)   | 4                    |
| Pine Bluff Arsenal, Arkansas      | M23 mines (VX)<br>M55 rockets (GB&VX)<br>Ton containers (H)   | 12                   |
| Pueblo Army Depot, Colorado       | Projectiles and cartridges (H)<br>Ton containers (H)  | 10                   |
| Tooele Army Depot, Utah           | Bombs (GB)<br>M23 mines (VX)<br>M55 rockets (GB&VX)<br>Projectiles and cartridges (H,GB&VX)<br>Spray tanks (VX)<br>Ton containers (H,GB&VX) | 42                   |
| Umatilla Depot Activity, Oregon   | Bombs (GB)<br>M23 mines (VX)<br>M55 rockets (GB&VX)<br>Projectiles and cartridges (GB&VX)<br>Spray tanks (VX)<br>Ton containers (H,GB&VX)   | 12                   |

<sup>a</sup>The amount of chemical weapons and agents stored at Johnston Atoll decreases as disposal operations continue.

CHEMICAL STOCKPILE LOCATIONS IN THE  
CONTINENTAL UNITED STATES



(709162)

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